

Numerical Modeling and Estimation of Renewable Energy of Tidal Current in Khoore Musa

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In this article, two three-dimensional hydrodynamic and numerical models, *COHERENS* and *BOM* are used to investigate the renewable tidal energy in Khoore Musa. Firstly, the effect of 6 tidal constituents on regional hydrodynamic is estimated in 10 sigma levels in vertical and 250 resolution. The results of both models are verified with field data recorded by Iranian National Institute for Oceanography. It is found that the outcomes of *COHERENS* are more reliable but calibration is required. Whereas the accuracy of calibrated hydrodynamic module of *COHERENS* is approved, the energy of tidal currents is calculated. In this study, the current energy module is developed and set as a supplementary module. Hourly averaging of current energy during one month indicated that the maximum value recorded was more than 0.65 *MWh*. The maximum depth-integrated energy of this area was about 5 *MWh*. The best and more advantageous area to extract energy is a strait in the Middle-Bar with density of more than 300 W/m^2 .

Keywords: Renewable energy, current, Khoore Musa, modeling, tide